DEVICE ACCESS

TECHNICAL FIELD

[0001] The example and non-limiting embodiments of the present invention relate to device discovery and device selection for a short-range wireless communication.

BACKGROUND

[0002] Establishing a wireless connection between two devices, including e.g. steps of device discovery, device selection and connection setup are in many occasions complicated operations. Multitude of different communication techniques and protocols may make it uncomfortable or even difficult for a user of a device to successfully perform these operations.

SUMMARY

[0003] According to an example embodiment, an apparatus is provided, the apparatus comprising at least one processor and at least one memory including computer program code for one or more programs, the at least one memory and the computer program code configured to, with the at least one processor, cause the apparatus at least to operate in one of a plurality of states, said plurality of states comprising at least a discoverable state wherein the wireless communication apparatus is discoverable but not connectable and a connectable state wherein the wireless communication apparatus is both discoverable and connectable, to receive, when being operated in the discoverable state, one or more requests from a remote wireless communication apparatus, and to change from the discoverable state to the connectable state in response to said requests fulfilling predefined criteria.

[0004] According to another example embodiment, a method is provided, the method comprising operating a wireless communication apparatus in one of a plurality of states, said plurality of states comprising at least a discoverable state wherein the wireless communication apparatus is discoverable but not connectable and a connectable state wherein the wireless communication apparatus is both discoverable and connectable, receiving, when operating the wireless communication apparatus in the discoverable state, one or more requests from a remote wireless communication apparatus, and changing from the discoverable state to the connectable state in response to said requests fulfilling predefined criteria.

[0005] According to another example embodiment, a computer program is provided, the computer program including one or more sequences of one or more instructions which, when executed by one or more processors, cause a wireless communication apparatus at least to operate in one of a plurality of states, said plurality of states comprising at least a discoverable state wherein the wireless communication apparatus is discoverable but not connectable and a connectable state wherein the wireless communication apparatus is both discoverable and connectable, to receive, when being operated in the discoverable state, one or more requests from a remote wireless communication apparatus, and to change from the discoverable state to the connectable state in response to said requests fulfilling predefined criteria.

[0006] The computer program referred to above may be embodied on a volatile or a non-volatile computer-readable record medium, for example as a computer program product comprising at least one computer readable non-transitory medium having program code stored thereon, the program which when executed by an apparatus cause the apparatus at least to perform the operations described hereinbefore for the computer program according to an example embodiment of the invention.

[0007] The exemplifying embodiments of the invention presented in this patent application are not to be interpreted to pose limitations to the applicability of the appended claims. The verb "to comprise" and its derivatives are used in this patent application as an open limitation that does not exclude the existence of also unrecited features. The features described hereinafter are mutually freely combinable unless explicitly stated otherwise.

[0008] Some features of the invention are set forth in the appended claims. Aspects of the invention, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of some example embodiments when read in connection with the accompanying drawings.

BRIEF DESCRIPTION OF FIGURES

[0009] The embodiments of the invention are illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings.

[0010] FIG. **1** schematically illustrates some components of a wireless communication arrangement and devices according to an example embodiment.

[0011] FIG. **2** illustrates device discovery and selection according to an example embodiment.

[0012] FIG. **3** illustrates device discovery and selection according to an example embodiment.

[0013] FIG. **4** device discovery and selection according to an example embodiment.

[0014] FIG. **5** illustrates a method according to an example embodiment.

[0015] FIG. **6** schematically illustrates some components of an exemplifying apparatus in accordance with an example embodiment.

DESCRIPTION OF SOME EMBODIMENTS

[0016] So-called touch-to-select (T2S) technique has been developed to facilitate a user-friendly approach for establishing the wireless connection between two devices. In the T2S technique, a first device (a touching device) is brought to a close proximity of a second device (a touched device), and, consequently, an automatic device discovery, device selection and connection setup between the touching device and the touched device follows. The T2S technique involves applying, in the touching device, a measure indicative of the strength of a signal originating from the touched device as an indication of the touched device being within a range that is considered suitable for establishing a wireless connection between the touching and touched devices.

[0017] In the T2S technique, the device discovery, i.e. the touching device discovering the presence of the touched device, is based on the touched device (or, typically, a to-be-touched device, to be precise) transmitting packet(s) according to used communication protocol that the touching device receives. The touching device is hence able to recognize a touchable device on basis of information received in the packet(s).

[0018] FIG. **1** schematically illustrates some components or entities of a wireless communication arrangement **100** to